UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,693	11/10/2003	Mark Anthony Aubart	IR 3663 CIP	5227

31684 7590 04/30/2007

ARKEMA INC.
PATENT DEPARTMENT - 26TH FLOOR
2000 MARKET STREET
PHILADELPHIA, PA 19103-3222

EXAMINER	
SANDERS, KRIELLION ANTIONETTE	
ART UNIT	PAPER NUMBER
1714	
MAIL DATE	DELIVERY MODE
04/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/705,693	AUBART ET AL.	
	Examiner	Art Unit	
	Kriellion A. Sanders	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 2/15/07.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Rejections not repeated herein are withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlitz et al, US Patent No., 4,593,055.

3. The rejection is repeated for reasons of record. Applicant's invention pertains to a copolymer of formula -[A]-[B]-, wherein A comprises $XSiR_3$ and B is a residue of an ethylenically unsaturated monomer. The claims also indicate that the polymers have an erosion rate in seawater of 2-15 microns per month.

Gitlitz et al discloses erodible antifouling marine paints, which include an organosilyl acrylate copolymer therein. The organosilyl acrylate copolymers of the patent correspond directly to the terpolymers of applicant's claims and are produced from the copolymerization of organosilyl silyl acrylate or methacrylate and one or more ethylenically unsaturated monomers. The molar amount of organosilyl silyl acrylate or methacrylate monomer to ethylenically unsaturated comonomer, ranges from 10 to 80 parts per 100 parts of copolymer. See col. 3, line 25 through col. 5, line 37.

Patentee indicates that the erosion rate of the polymers is superior. Gitlitz et al indicates that the control of the erosion rate relies on chemically tailoring the polymer so that it is selectively weakened at certain points pendant to the polymer chain at the paint/water interface. The resulting weak links are slowly attacked by seawater allowing the polymer to gradually become seawater soluble or seawater swellable. This weakens the hydrolyzed surface polymer film to such an extent that moving sea-water is able to wash off this layer and thus expose a fresh surface. In contrast to prior art systems, the system of the patented invention, exhibits a paint that is relatively impermeable to seawater until hydrolysis of the outer microlayer takes place. The water "friction" then sequentially removes the hydrolyzed microlayer. See col. 5, lines 43-57. The erosion rate of the final paint is said to depend upon the total contributions of functional groups, comonomers and other components in the paint.

It would have been obvious to one of ordinary skill in the art to produce an erodible antifouling marine paints, which includes an organosilyl acrylate copolymer therein and select specific functional groups, comonomers and other components within that paint so as to obtain an erosion rate in salt water of 2-15 microns per month. Patentee documents this at col. 8, lines 45-48.

Because Gitlitz et al suggests the components and weight percentages of the presently claimed compositions, the resulting polymers produced from these suggested components would inherently possess an erosion rate in seawater suitable for use as a binder in a marine antifouling paint.

Response to Arguments

1. Applicant's arguments filed 2/15/07 have been fully considered but they are not persuasive.

Applicant avers that Gitlitz et al does not teach every element of the present claims and therefor does not present a prima facie case of obviousness. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Applicant states in his remarks:

> The Gitlitz reference fails to teach or suggest a marine anti fouling paint having terpolymers. It does cite "one or more copolymerizable ethylenically unsaturated monomers" (col 4, lines 8 and 9), however there is no teaching of any advantage to ~ion rate or flexibility as surprising found by Applicant. Indeed, the Gitlitz reference teaches away from terpolymers by Exemplifying only copolymers having only two different monomers. Since the use of more than two monomers was not recognized as a result-effective variable by the Gitlitz reference, it cannot be optimized by routine experimentation (MPEP 2144.05). The use by Gitlitz of only two different monomer units in a polymer also teaches away from Applicant's claims.

This argument is not persuasive because applicant 's definition of terpolymer as used to describe the invention and as set forth in the specification at paragraph [0018] encompasses the polymers of Gitlitz et al. Additionally, the copolymers of Gitlitz et al are described as resulting from the copolymerization of one or more copolymerizable ethylenically unsaturated monomers

and a monomer having a functional group that produces an organosilyl acrylate copolymer that is hydrolyzable in seawater. See col. 3, lines 25-32.

3. Applicant argues that the present claims require an erosion rate of the terpolymer in seawater of from 2-15 microns per month, while the antifouling paint compositions of Gitlitz have an erosion rate in seawater of at least 2 microns per month. Applicant suggests that the erosion rates of Gitlitz are based upon the total paint composition, whereas the erosion rates of the present clams are based just upon the terpolymer.

4. The disclosure at col. 8, lines 45-47 of Gitlitz indicates that the paint compositions have an erosion rate of at least 2 microns of paint film thickness per month. This would indicate that the thickness of the paint film erodes at a rate of at least 2 microns per month. Applicant is advised that according to Gitlitz, the paint film is composed of a copolymer binder as depicted by the formula of claim 1. That copolymer binder is essentially the same as the copolymers of applicant's claims. Therefor, Gitlitz discloses that the copolymer binder of the patented invention have an erosion rate of at least 2 microns per month.

5. There is no clear differentiation between the units of erosion of applicant's claims and the units of erosion of Gitlitz. Both erosion rates are based upon the copolymers. The Gitlitz erosion rates overlap and encompass the erosion rates of applicant's claims, which are specified as being from 2-15 microns. Applicant is mistaken in alleging that the erosion rate specified in Gitlitz is based upon the interaction of the components of the total paint composition.

6. Applicant argues that Gitlitz fails to teach or suggest that a copolymer containing 9 to about 20 mole percent of triarylsilyl(meth)acrylol groups can be used in a marine antifouling paint and have an erosion rate in sea water of from 2-15 microns per month.

7. Applicant further argues that Gitlitz teaches away from applicant's claims by exemplifying only polymers having 20 percent or more of any organosilyl groups. These arguments have not been found to be persuasive because if as applicant states, Gitlitz exemplifies only polymers having 20 percent or more of any organosilyl groups, then applicant's claim limitations have been met since the requirement for 20 percent or more organosilyl groups of Gitlitz overlaps the 9 to about 20 mole percent of triarylsilyl(meth)acrylol groups of applicant's claims. However claim 7 of Gitlitz teaches that the specific organosilyl moiety of claim 1 of the patent is present in an amount of 10-80 molar parts based on the copolymer binder. It is believed that applicant's molar ratio of triarylsilyl (meth)acrylol groups is met by patentee's claims 1 and 7.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 8:30am-7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kriellion A. Sanders
Primary Examiner
Art Unit 1714

ks